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Working capital management and financial performance of non financial quoted companies in Nigeria

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ABSTRACT

This study examines the effect of working capital management on the financial performance of Non-financial companies quoted on the Nigerian Stock Exchange over the period 2014 – 2018 while using a panel research design. This work is unique because it considers a sample of 71 companies drawn from all the 10 non-financial sectors of the NSE. Unlike most extant studies, financial performance was captured by earnings per share as a proxy, while the right-hand side variable being working capital management was denominated by Accounts receivable period, Inventory turnover period, and Accounts payable period. This study also considered the effect of some control variables namely annual capital expenditure, age of firm, GDP, firm size, growth of the company, and firm leverage on EPS. Data were retrieved from the Nigerian Stock Exchange 2019 Factbook. The model estimation technique adopted was the Pooled Ordinary Least Squares, fixed effect, and random effect methods. Results from this study are consistent with the theoretical position that all aspects of working capital management have a significant effect on financial performance. While ITP and ACP were negatively related to EPS, APP was found to have a positive relationship with EPS. The research results also reveal that although all the control variables were found to be significant, only the age of the firm was deemed to be positively related to EPS. Based on the findings, the research recommends that firms should focus their managerial attention on lowering their ITP and ACP while increasing their APP, as results indicate that management of these elements of working capital can translate into liquidity and higher profitability.

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Introduction

The Central Bank of Nigeria (CBN) in its January 2020 Business Expectations Survey Report enumerated the most critical difficulties faced by firms in Nigeria. According to the CBN report, high-interest rates of Nigerian banks was considered a major hindrance to business growth in the country. Availability of capital ranked second in the list of challenges confronting businesses in Nigeria. This development highlights the need for businesses to resort to effective working capital management in a bid to fund their day to day activities.

On the global stage, Tsuruta (2019), rightly noted that before the financial crisis in 2007, businesses were less concerned about working capital management as finance was available at affordable interest rate. As a result, managers saw no point in bothering about how to manage cash. However, the last thirteen (13) years have been different, capital and credit have ceased, and customers now take longer time to settle accounts, while late payments have become more unacceptable to suppliers (Dullien, 2010). The joined impact of the aforementioned factors has been detrimental to the short-term cash flows and cash positions of companies thus increasing the need for a return to working capital management. The financial crises and the resultant tight credit situation have heightened the need for businesses to better manage their liquidity (Dullien, 2010).

According to PricewaterhouseCoopers (2018), cash is the heart of every business and considering that working capital is the cheapest source of cash, it has become critical for businesses to imbibe a cash culture and good liquidity. This is a major reason why managing

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working capital has now become a top priority for many companies (JP Morgan, 2019). Working capital is the lifeblood of every organization and is capable of creating or destroying shareholders wealth (Wolf, 2015). By focusing on working capital management, firms can reduce risk and increase profitability (Tingbani, 2015). Due to shortage of credit access and over-dependence on short-term resources, it is contended that working capital is paramount for liquidity, firm growth and profitability (Briones 2019).

Numerous research works have been carried out on working capital management on account of the importance of the topic. Despite the contributions of these works, some gaps in the literature have been noticed. These gaps are discussed below:

Firstly, over the years, the studies carried out in this area have focused on the impact of working capital management on financial performance ratios such as Return on Asset (ROA) and Earnings before Interest, Tax, Depreciation and Amortization (EBITDA). Consequently, this work adopted a novel financial measure being Earnings per Share (EPS). To the knowledge of this researcher, the only work which employed EPS was that of Bagh et al. (2016) which considered data of 2005 to 2014 while this study relied on more recent data (2014 to 2018).

Secondly, existing literature provide an insight on the relationship between working capital management and financial performance. However, little is known about the moderating or mediating role played by other key financial decisions such as capital structure and corporate investment decisions. Hence, this work considered variables such as the capital structure, capital expenditure as well as firm specific features such as age of the firm and size of firm.

Thirdly, this work is motivated by the scantiness of extant research works that consider the effect of macroeconomic factors such as Gross Domestic Product (GDP) in the relationship between working capital management and financial performance of firms. As earlier mentioned, economic fundamentals influence the size of companies' working capital, it is rational therefore, to investigate its intervening effect on the relationship working capital on financial performance of firms. Hence this work studied the effect of macro-economic conditions on the relationship between working capital management and financial performance of firms.

Fourthly, majority of indigenous research works conducted on this topic (Muhammad 2015; Abdulazeez et al. 2018; Godswill et al. 2018) considered specific sections of the Nigerian Stock Exchange such as textile, conglomerate and financial companies. Although Simon et al (2018) considered a larger sample including all non-financial firms, the data collected for the work was from 2007 to 2015 while this study adopted a similar sample, and it employed a more recent data of 5years from 2014 to 2018.

Lastly, the contradictory outcomes of the extant literature on the link between working capital management and profitability is another motivation for this study. While some empirical works conclude that working capital has a statistically significant effect on financial performances of companies some other research works conclude that there is no basis for such an assertion. Hence, this work seeks to investigate the nature of relationship between working capital and financial performance of companies quoted on the non-financial sector of the Nigerian Stock Exchange within the period of 2014 and 2018.

The objectives of the study are (i) to examine the relationship between Inventory Turnover Period (ITP) and Earnings per share (EPS) of non-financial companies quoted on the Nigerian Stock Exchange; (ii) to investigate the relationship between Accounts Collection Period (ACP) and Earnings per share (EPS) of non-financial companies quoted on the Nigerian Stock Exchange; (iii) to study the relationship between Accounts Payable Period (APP) and Earnings per share (EPS) of the non-financial companies quoted on the Nigerian Stock Exchange.

The research questions of the study are (i) to what extent does Inventory Turnover Period (ITP) affect Earnings per share (EPS) of the non-financial companies quoted on the Nigerian Stock Exchange? (ii) is there any relationship between Accounts collection period (ACP) and Earnings per share (EPS) of the non-financial companies quoted on the Nigerian Stock Exchange? (iii) how does Accounts payable period (APP) affect Earnings per share of the non-financial companies quoted on the Nigerian Stock Exchange?

Literature Review

Theoretical and Conceptual Background

The concept of working capital

The concept of working capital is tangled because as noted by Ismail (2018), the distinction between current assets and current liabilities is precisely known as net working capital, but financial managers often casually refer to the difference as working capital. Strictly speaking, gross working capital is the capital invested in total current assets of the business concern while net working capital is the excess of current assets over the current liabilities of a firm during a particular period (Mun & Jang, 2015). Net working capital is described as the capital which is not fixed but the more common usage of the word net working capital is the difference between the book value of current assets and current liabilities (Wasiuzzaman, 2015). According to Le et al. (2018), working capital is important to businesses because it is used for purposes such as purchase of raw materials and spares, payment of wages and salary, meeting day-to-day expenses as well as meeting its credit obligations.

The major aim of many firms is to be profitable and to be liquid enough to meet its short terms obligations. Certainly working capital management contributes to the company's performance and achievement of these objectives (Afrifa, 2016). On the one hand, large

amount of working capital does not augur well for firms as this is likely to lead to financial difficulties and conversely, too little working capital is also not suitable for the business because it could result in liquidity crisis for the firm. Smith (1980) suggests that working capital management is vital because of its influence on a firm's profitability, risk and, consequently, on its value. According to Rehn (2012), WCM involves two main decisions. These include working capital financing strategies and working capital policy

Working capital management is the day to day function of management that involves planning, organizing and controlling the components of working capital such as cash, bank balance, inventory, receivables, payables, overdraft and short-term loans (Iqbal & Zhuquan, 2015). This involves determining the optimal amount of working capital of the business with a view to avoiding overcapitalization or overtrading. Overcapitalization is the excessive buildup in inventories, accounts receivables, coupled with numbered accounts payable thus resulting in inefficient use of resources and reduction in profitability. On the other hand, overtrading occurs if a business is trying to support large volume of trading with little or no internally generated funds and instead relying on inadequate long term debt at its disposal. This could lead to profit in the short term but ultimately result in liquidity issues for the business.

The relationship between working capital management policy and cash flow may be explained by means of the cash conversion cycle. The cash conversion cycle is based on four elements which are inventory, receivables, cash and payables. The cash conversion cycle is the period of time which lapses between the point at which cash begins to be expended on the procurement of inventory and the collection of cash from the customers.

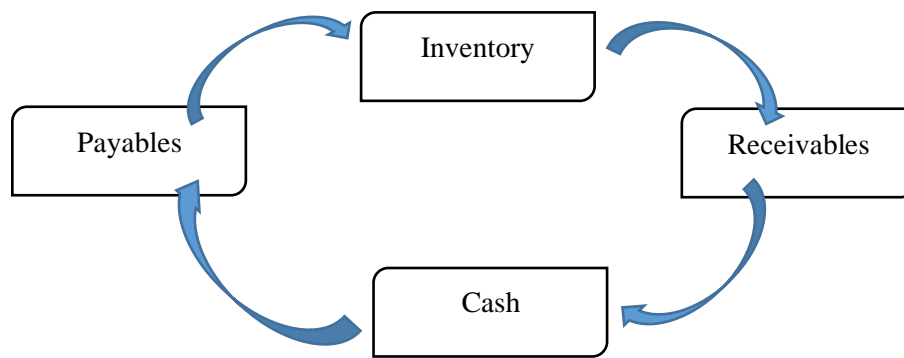


Figure 1: Cash conversion cycle (CCC); *Source:* Chang (2018)

The cash conversion cycle shown in figure 2.3 above shows the process through which a firm's inventory becomes cash and from which payables are settled. A shorter number of days in the CCC may mean that the firm is able to use inventory faster and collect outstanding revenues faster, relative to its payment on accounts. Efficient cash conversion may also imply paying accounts faster, as there may be discounts from vendors associated with early settlement of accounts. Therefore, reduced inventories and receivables and reduced direct costs associated with receipt of discounts may signal that a shorter CCC results in higher profitability (Upadhyay, Sen & Smith 2015).

Inventory

Inventory is the most important current assets for most firms. Inventory management encompasses the programming of acquisition, management, storage and recording of raw material. Inventory management involves agreeing on the items to be procured, the mode of buying, the appropriate quantity to purchase, the supplier, and method of storage (Bin Syed et al., 2016). The best-known approach for managing inventory is the economic order quantity (EOQ) approach which is based on the idea of reducing the totality of a firm's carrying and shortage cost. The carrying cost is the direct costs of keeping inventory, while the shortage cost is defined as the costs of not having enough products on hand to sell (Preve & Sarria-Allende, 2010). Inventory management techniques are covered in detail in production management, however the efficiency of the inventory management policies of a firm can be evaluated by using the inventory turnover period. ITP shows the average time required to sell the inventory the firm acquires (Brigham & Houston, 2011). This ratio indicates how efficiently businesses are able to convert inventory into sales.

Accounts receivable

According to Murthy (2015), trade credit involves selling goods and services in exchange for payment in the future. It results in an interval between the delivery of goods and the provision of services by a supplier and when payment is made for them (Baños-Caballero, García-Teruel & Martínez-Solano, 2010). A firm that sells on credit is implicitly investing by lending its customer. Credit control policy are principles set to regulate the quantity and nature of credit extended to customers. The components of a typical credit policy are terms of the sale, credit analysis, and collection policy.

Accounts payable

Accounts payable is the amount that companies are obliged to pay over the short term. Payables are important for working capital management because they affect the size of a firm's financial needs for operation (FNOs). Actually, by exploiting the use of trade credit, a firm can reduce its working capital requirement and reduce the need to finance its operation with short-term financial debt. However, by settling its obligations timely, a firm can benefit from a significant financial discount due to the discount offered for early payments. Trade payables are a vital source of short term funds (Johnson Jr et al., 2019). According to Martinez-Sola et al. (2013), firms tend to have an optimal accounts payable policy due to the existence of market imperfection. However, trade payable has benefits and costs to firms' accounts payable helps to enhance operational efficiency and profitability through the reduction of transactional cost. The efficiency of payables of a firm can be evaluated by using the APP. This ratio shows the average length of time in which creditors remain unpaid. It is the average length of time between acquisition of inventory and payment to the sellers.

Financial performance

Financial performance provides information about the company's financial condition over a specific time period within which finance is mobilized and used. Financial performance of firms can be measured using several indicators. According to Kabethi (2013), financial performance entails measurement of the results of a firm's policies and operations in monetary terms. According to Machiuka (2010), financial performance demonstrates the financial state of the firm, the degree of the competition in the industry, and a comprehensive knowledge about the profitability of the sectors within the firm.

Financial performance is a measure of a business ability to make profit or revenue based on the information provided in the financial statements. The financial statements consist of balance sheet, income statement, cash flow statement, and changes in capital (Fatihudin & Mochklas, 2018).

There are several ratios to measure the company's financial performance and these ratios can be broadly classified into five categories such as liquidity ratio, profitability ratio, solvency ratio, efficiency ratio, and leverage ratio. Profitability ratios measure the performance of the company in terms of the profit generated over the period being considered. This study adopts EPS (Earning per share) as a measure of financial performance.

EPS is an indicator that is critical to both the organization as well as shareholders because it is widely reckoned to be the most consistent basis of evolving corporate strategic plans (Helfert, 1991). Worldwide, EPS is deemed to be the most accepted financial performance measure. Nabi, (2014) restated relevance of EPS as a reliable measure of financial performance. The attractiveness of EPS is due to how well it sums up the earnings made for shareholders by management (Toy, 2016).

Working capital and financial performance

As noted by Falope and Ajilore (2009), working capital management affects profitability, risk assessment and market value of the firm. Adequate management of working capital results in greater efficiency of companies. The cash cycle comprises the period between the initial cash disbursement and the receipt of the sale of the product. The economic cycle, on the other hand, considers only economic nature and involves the purchase of materials until the respective sale (Sagner, 2010). Wolf (2015) claims that the improper management of working capital usually results in serious financial problems, which may ultimately result in the company's insolvency. Working capital is an important tool for growth and profitability for corporations because it affects the company's risk, return, and firm's value. The cash conversion cycle (CCC) has been the main traditional measure adopted by previous studies to measure working capital management of a firm. It is decomposed into three components, (i.e. inventory management, accounts receivable management and accounts payable management). In order to better understand the relationship between working capital management and profitability, Afrifa (2013) suggests that the individual components of working capital management which affect profitability differently be studied separately. This study therefore investigates the effect of the individual component of working capital management on firms' financial performance.

Theoretical framework

The CCC theory which was originated by Richards and Laughlin (1980) suggests that the shorter the cash conversion cycle of a business the better the financial performance. Gitman (1974) suggested that CCC is the most critical feature in working capital management. The cash conversion cycle highlights the strengths and weaknesses of the company's working capital management policy. The cash conversion cycle equals the length of time between the firm's actual cash expenditures to pay for productive resources in form of materials and labour and its own cash receipts from the sale of products (Oseifuah & Gyekye, 2017). According to Chang (2018), many studies have concluded that reduced cash conversion cycle leads to increased profit and vice versa. Figure 2.4 below highlights the relationship between the four main parts of cash conversion cycle which include: inventory, accounts receivable, cash and accounts payable.

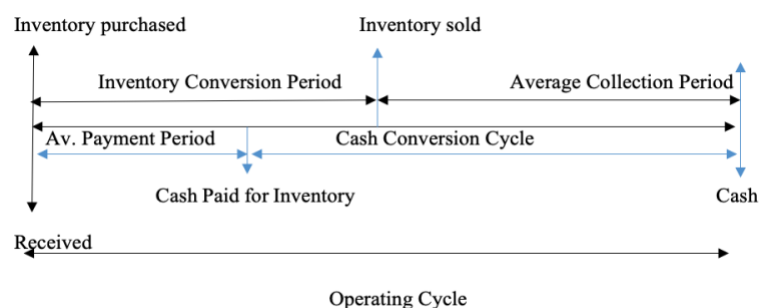


Figure 2: Operating and cash conversion cycle; Source: Uyar (2009)

An operating cycle represents the amount of time it takes a company to acquire inventory, sell that inventory, and receive cash from its customers in exchange from the sales of inventory. On the other hand, the cash conversion cycle is the number of days needed for a company to transform inputs to cash. The cash conversion cycle provides information about the stability of firm's finances as it shows the time it takes assets invested in business processes to yield returns. The cash cycle commences when a firm pays to obtain inventory and winds up when cash is retrieved after customers settle their obligation. A shorter cash cycle, therefore, indicates that a company has more reliable access to cash on hand, and more opportunities to use that cash to further the business. While both cycles serve similar purposes, the operating cycle tells about how efficient a firm is in its operation, while the cash cycle tells about the company's management of cash flow. CCC theory is adopted as the theoretical framework that underpins this study following the examples of previous research works such as Shadrack et. al. (2015), Mab and Makoni (2019); Altaf and Shah (2017); and Zalaghi and Godini, (2019).

Empirical review

In this section, a survey of the empirical literature is undertaken. The studies have been analyzed based on their outcomes, while some studies arrive at conclusions that agree with the cash conversion cycle theory, some others reach a conclusion not in agreement with the cash conversion cycle theory.

Studies that confirm the cash conversion cycle theory

Shadrack, Jane and William, (2015) studied working capital management and financial performance of tourist hotels in Mombasa, Kenya. While Return on Investment (ROI) was used as a measure of profitability, Debtors' Collection Period, Creditors' payment period and Cash Conversion Cycle were used to measure working capital management. The correlation matrixes showed that Debtors' Collection Period and Cash Conversion Cycle have significant negative relationship with Return on Investment. However, Creditors' Payment Period has significant positive relationship with financial performance.

Similarly, Kumaraswamy (2016), explored the impact of working capital on the firm performance of cement manufacturing Gulf Cooperation Council (GCC) firms. The study employed survey research design using panel data of 20 companies listed on the Stock exchanges of Saudi Arabia, Abu Dhabi, Kuwait, Sultanate of Oman and Qatar. EBITDA was adopted as the proxy of firm performance while working capital was denominated by inventory conversion period, average collection period, average payment period, cash conversion cycle, current ratio, and fixed asset turnover. The research work relied on secondary data from Thomson Reuters Database on the selected companies for the period 2008-2014 (7 years). The study used regression method for model estimation. The results of the study indicated that average collection period and inventory conversion period were the more significant factors followed by average payment period.

Likewise, Godswill, Ailemen, Osabohien, Chisom and Pascal (2018), investigated how profitability of banks can be enhanced through the working capital management. The research design of the study was panel studies while the sample consisted of ten (10) deposit money banks in Nigeria. The measures for profitability were return on asset (ROA) and return on equity (ROE) while proxies for working capital management were net interest income, current ratio, and profit after tax, and monetary policy rate. Secondary data were collected on the variables from 2010–2016. The model estimation technique employed for this study were the panel fixed effect, panel random effect and the pooled OLS. The results of this study showed that working capital management has a significant effect on the profitability of the selected banks and that return on asset is a better measure for bank profitability.

Vuković and Jakšić (2019), conducted a research on the effect of working capital management on company's profitability. The research design adopted for this work was panel design while the sample of the study included 9883 active companies in food industry in Southeast Europe. Company profitability was denominated by return on assets (ROA) while working capital was denominated by current liquidity, the ratio of current to total assets of companies, the ratio of current liabilities to total assets of companies, financial leverage and size of the company. Data collected for the purpose of the study was secondary in nature. The scope of the study was from 2010-2014. The model estimation technique used for the study was probit regression analysis which revealed that all of the analyzed variables of working capital management have statistically significant impact on the probability of higher profitability with the exception of current liquidity and current liabilities to total assets ratio and financial leverage. Also, Kabuye, Kato, Akugizibwe

& Bugambiro (2019), conducted a research aimed at examining the contribution made by the internal control systems and working capital management on financial performance of supermarkets. The research employed cross-sectional data collected from a sample of 110 supermarkets in Uganda. The study was based on the agency relationship and cash conversion cycle. They used simple random sampling technique. The proxies for the dependent variable were profitability, liquidity, and return on equity. The independent variables were inventory conversion period, average conversion period, and average payable period. The research employed control activities, information systems, risk assessment; stock management, cash management, creditors' management, debtor's management as their control variables. Data collection was through questionnaire survey covering the variables identified for one year i.e. 2019. The model estimation technique adopted by the researchers was correlation and regression. The results of the study suggest that working capital management is a significant predictor of financial performance while internal control systems do not significantly predict financial performance.

Studies that contradict the cash conversion cycle theory

Murthy (2015), investigated the impact of level of working capital on a firm's financial performance of 153 large manufacturing firms operating in the six Gulf Cooperation Council Countries. The work relied on cross sectional data on 153 large manufacturing firms. The proxy for dependent variable in this study was ROA while the proxies for firm financial performance included average inventory to cost of goods sold ratio, average receivables to sales ratio, and average payables to cost of goods sold ratio. The study adopted some control variables including size, gross -margins, and age of the firm. This study relied on secondary data from end of year financial statements of the selected companies. Being a cross sectional study, the scope of the study only covered one year (i.e. 2012). The model estimation technique used in this work was the robust least squares estimation method. The researcher found that pre-tax return on assets is strongly influenced by average accounts receivable levels. Inventory levels were found to have no impact on financial performance. Similarly, payables had no effect on financial performance. Average accounts receivables have a significant negative influence on performance of GCC manufacturing companies.

Subsequently, Mab and Makoni (2019), investigated the nexus between working capital management and the financial performance of companies. They used survey research design based on panel data collected on 12 listed food and beverage firms in South Africa. Their work was based on the aggressive working capital management theory. For the purpose of the work, they used ROA as their dependent variable while they used inventory conversion period (ICP), average collection period (ACP), average payment period (APP) as proxies for working capital management. Control variables such as the size of the company (proxied by total assets), the current ratio, and the GDP were included in the research model. The data collection method was secondary in nature. The scope of the work was from 2007 to 2016. Using regression analysis as their model estimation technique, the researchers discovered that a positive relationship was present between the inventory conversion period (ICP) and financial performance, a negative association between the average collection period (ACP) and ROA, while a positive relationship between the average payment period (APP) and financial performance.

In the same vein, Altaf and Shah (2017), tested the relationship between working capital management and performance. The work employed survey research design using a panel data on 437 non-financial Indian companies who were selected based on a systematic deletion method of sampling. The measures of firm performance were Return on assets and Tobin's Q, while the measures of working capital management were Cash conversion cycle, Cash conversion squared, Accounts receivable period, Inventory conversion period, Accounts payable period. The work used two control variables which were firm size, and growth. The research relied on secondary data of the selected companies relating to the ten-year period of ten from 2007-2016. The model estimation technique adopted was the generalized method of moments (GMM) technique. Results of the study confirm the inverted U-shape relationship between working capital management and firm performance.

Equally, Mohamad, Rahman and Saad (2017), studied the effects of working capital investment policy on firm's financial performance. The research design of the study was panel design. Unlike other works, this work adopted tradeoff theory as its theoretical framework. The sample of the study was 103 small and medium-sized firms listed with the SME Corporation of Malaysia. The researchers used ROTA as a proxy of firm financial performance while employing investment policy, accounts receivable turnover, account payable turnover and the log value of cash and cash equivalent. The data collection method adopted by this work was through secondary source which specifically was the annual reports of the selected SMEs. The scope of this work was 5 years from 2008 to 2013. This work relied on correlation and pooled ordinary least square regression for its model estimation. They found out that cash has a positive significant relationship with ROTA, while accounts receivable turnover has negative effect on ROTA while account payable turnover has positive but weak relationship with ROTA.

Similarly, Bagh, Nazir, Khan, Khan, and Razzaq (2016) empirically explored the impact of working capital management (WCM) on firm performance. The research design was panel design which used a sample size of 50 listed non-financial companies on Pakistani Stock Market who were selected based a random sampling. The measure adopted for firm financial performance were return on asset (ROA), return on equity (ROE) and earning per share (EPS). Working capital management was represented using inventory turnover (ITO), cash conversion cycle (CCC), average collection period (ACP), and average payment period (APP). Data on these variables were collected through secondary sources. The scope of the study was 9 years from 2005 to 2014. The model estimation technique used for this work included quantitative research methods, correlation matrix and multiple regressions. The results of multiple regression confirmed that the APP, ITO and CCC have negative and significant impact on ROA but ACP has positive and significant

impact on ROA. While APP has negative significant impact on ROE. The ITO has negative significant impact on EPS while ACP has positive and statistically significant impact.

Likewise, Kowsari and Shorvarzi (2017), studied the relationship between working capital management, financial constraints and performance. The research design used for the study was panel studies. The sample of the study included 148 companies listed on the Tehran Stock Exchange. The proxy of financial performance was ROA. Data collection method used for the purpose of the secondary source of data. The scope of the study was 4 years from 2009 to 2013. The model estimation technique employed for the research was regression. The results of the study show that ROA has a negative impact on working capital management. While financial constraints were observed to affect the relationship between working capital management and return on assets.

Similarly, Simon, Sawandi and Abdul-Hamid (2018) investigated the relationship between working capital management (WCM) and firm performance while using a panel research design with a sample of 75 non-financial firms listed on the Nigerian Stock Exchange. Firm performance was denominated by return on assets and Tobin's Q while accounts receivable management, inventory management while accounts payable management, cash conversion cycle and cash conversion efficiency were adopted as independent variables. The results of the study show that accounts receivable management and inventory management were negatively associated with the return on assets, while accounts payable management, cash conversion cycle and cash conversion efficiency were positively related. Data collection method was through secondary sources covering all the variables for the period of 8 years from 2007 to 2015. The model estimation technique employed by the research was regression analysis. The researchers found that specifically, accounts receivable management and inventory management were negatively associated with the return on assets, while accounts payable management, cash conversion cycle and cash conversion efficiency were positively associated with return on assets. Additionally, accounts receivable management and inventory management were positively associated with Tobin's Q, whereas accounts payable management, cash conversion cycle and cash conversion efficiency were negatively associated with Tobin's Q.

Also, Zalaghi and Godini, (2019) examined the moderating role of firm characteristics on the relation between working capital management and financial performance. The study adopted a survey research design using a sample of 142 company listed on the Tehran Stock Exchange. The study used ROA as the proxy of firm financial performance while using cash conversion cycle (CCC) as independent variables. The study adopted firm size, debt ratio, and governmental ownership as control variables. The data collection method used by the researchers was collected from the annual report of the selected companies covering the period of 9 years from 2008 – 2017. The model estimation technique used in this study was the multivariate regression model. The results of the study show that firm size affects the relationship between CCC (as a measure of working capital management) and ROA (as a measure of firm performance). However, debt ratio and governmental ownership do not have any significant effect on the relationship between working capital management and financial performance of firms.

Abdulazeez, Baba, Fatima, and Abdulrahman (2018), examined the impact of working capital management on the financial performance of listed conglomerate companies in Nigeria. The research design was panel data of: five (5) companies, the proxy for dependent variable was return on investment while the proxies for working capital management were debtors' collection period, creditors' payment period and firm size, cash conversion cycle. The data for the study were retrieved from the annual reports and accounts of the studied companies for the 9-year period between 2005 and 2014. The model estimation technique used were correlation, variable inflation factor (VIF), Ordinary Least Square (OLS) Regression. The results of the study indicate that debtors collection period, creditors payment period and firm size were negatively related to return on investment while cash conversion cycle has positive but insignificant relationship with the financial performance of the studied companies.

Literature gaps

Firstly, over the years, the studies in this area have focused on the impact of working capital on financial performance measures such as Return on asset (ROA) and earnings before interest tax, depreciation and amortization (EBITDA). This work adopted a novel financial measure which is, Earnings per share (EPS). The only work which to the knowledge of this researcher considered EPS was that of Bagh et al. (2016) which considered data of 2005 to 2014 while this research relied on more recent data (2014 to 2019).

Secondly, numerous scholarly articles provide a view about the relationship between working capital management and financial performance. However, little is known about the moderating or mediating role played by other key financial decisions such as capital structure or leverage decisions and corporate investment decisions. Hence this work investigated the effects of these key financial decisions on the financial performance of non-financial firms on the NSE.

Thirdly, this work is motivated by the absence of extant research works that consider the effect of macroeconomic factors such as gross domestic product (GDP) in the relationship between working capital management and financial performance of firms. As earlier mentioned, economic fundamentals influence the size of companies' working capital, it is rational therefore, to investigate its intervening effect on the relationship between working capital and financial performance of firms.

Fourthly, majority of the indigenous research works conducted on this topic (Muhammad 2015; Abdulazeez et al. 2018; Godswill et al. 2018) considered only a small section of the Nigerian Stock exchange such as textile, conglomerate and financial companies. Although Simon et al (2018) considered a larger sample including all non-financial firms, the data collected for the work was from 2007 to 2015 while this study adopted a similar sample but will be employing more recent data of 5 years from 2014 to 2019.

Lastly, the conflicting results of the existing literature on the relationship between working capital management and profitability is another motivation for this study. While some empirical works conclude that working capital has a statistically significant effect on financial performances of companies some other research works conclude that there is no basis for such an assertion.

Research Hypotheses

The research hypotheses of the study are:

H0 1: There is no significant relationship between Inventory Turnover Period (ITP) and Earning per share (EPS) of the non-financial companies quoted on the Nigerian Stock Exchange.

H0 2: There is no significant relationship between Accounts Collection Period (ACP) and Earning per share (EPS) of the non-financial companies quoted on the Nigerian Stock Exchange.

H0 3: There is no significant relationship between Accounts Payable Period (APP) and Earning per share (EPS) of the non-financial companies quoted on the Nigerian Stock Exchange.

Research and Methodology

Research design

This study applied the panel studies which is a longitudinal study investigating the variables of concern in the different organisations over a period of time. Panel data has been adopted for this study because panel data sets have several major advantages over cross-sectional or time-series data sets (Hsiao 2000). Panel data usually gives the researcher a large number of observations thereby increasing the degrees of freedom and reducing the collinearity among explanatory variables. This ultimately leads to improving the efficiency of econometric estimates. Panel data also makes it possible to generate more precise forecasts for individual results than time-series data. Thus, a more accurate depiction of an individual's behavior can be obtained by pooling the data (e.g., Hsiao and Mountain (1994); Hsiao and Tahmiscioglu (1997); Hsiao, Applebe, and Dineen (1993)). Importantly, panel data assumes that firms are heterogeneous whereas time-series and cross-section studies which do not consider this heterogeneity run the risk of obtaining biased results. Baltagi (2005) also notes that panel data gives more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency.

Population and sample of the study

The population of the study consists the 101 non-financial companies quoted on the Nigerian Stock Exchange (NSE). As mentioned by Falope and Ajilore (2009), financial services companies' financial characteristics are fundamentally different from non-financial firm hence a need to exclude companies in the financial sector as earlier practiced by Simon et al (2018). The sample size of this study included 71 out of 101 non-financial companies on the NSE. This amounts to 71% of the population. The sampling technique espoused is the stratified sampling procedure in which the population is grouped into some definite characteristics. Each of these groups is known as strata. From these strata the sample is selected by applying random selection technique on each stratum. In selecting particular number of items from the various strata, the researcher ensured that the number was proportional to the stratum's share of the total population. The contribution of each of the sectors to the sample is shown in table 3.1 below

Table 1: Analysis of the non-financial companies on the Nigerian Stock Exchange

S/N	Sectors	Sector contribution to Population	Proportion of Sector in the Population (i)	Sample size (ii)	Sector contribution to Sample (i × ii)
1.	Agriculture	5	5/101	71	3
2.	Construction/ Real Estate	4	4/101	71	3
3.	Consumer Goods	20	20/101	71	15
4.	Healthcare	10	10/101	71	7
5.	Industrial Goods	14	14/101	71	9
6.	Information & Communications Technology	7	7/101	71	5
7.	Natural Resources	4	4/101	71	3
8.	Oil & Gas	9	9/101	71	6
9.	Services	23	23/101	71	17
10.	Conglomerates	5	5/101	71	3
	Total	101			71

Source: Author's compilation

Model Estimation Technique

The study used correlation and regression analysis to answer the earlier stated research questions. Pearson correlation was used to determine the extent to which the two variables are linearly related or the strength of relationship between the variables. The study also used the three types of panel analytic models namely: Pooled regression model, fixed effect model and Random effect model. Pooled regression model is one type of model that adopts constant coefficients, referring to both intercepts and slopes. The fixed effect model assumes constancy of those variables whose values do not change across time and thus does not estimate them. On the other hand, the random effect model estimates the effects of time-invariant variables (Seddighi, 2000).

Model Specification

The study was based on the following model

$$LEPS_{it} = \alpha + \gamma_0 ITP_{it} + \gamma_1 ACP_{it} + \gamma_2 APP_{it} + \gamma_3 SIZE_{it} + \gamma_4 GRTH_{it} + \gamma_5 LEV_{it} + \gamma_6 CAP_{it} + \gamma_7 AGE_{it} + \gamma_8 GDP_{it} + \mu$$

Definition of variables

Table 2: Definition, description and measurement of variables

Variable	Description	Measurement
LEPS	Log of Earnings per share	$\frac{EAIT}{\text{Issued ordinary shares}}$
ITP	Inventory turnover period	$\frac{\text{Average inventory}}{\text{cost of goods sold}} \times \frac{365 \text{ days}}{1}$
ACP	Average collection period	$\frac{\text{Debtors}}{\text{credit sales}} \times \frac{365 \text{ days}}{1}$
APP	Average payment period	$\frac{\text{Creditors}}{\text{Purchases}} \times \frac{365 \text{ days}}{1}$
SIZE	size of the firm	Natural logarithm of total assets
GRTH	Growth of the firm	$\frac{\text{sales}_{i,t} - \text{sales}_{i,t-1}}{\text{sales}_{i,t-1}}$
LEV	Leverage	$\frac{\text{total (longterm + short – term) debt}}{\text{total assets}}$
CAP	Capital expenditure	Net cash flow from investing activities
AGE	Age of the firm	Number of years for which the firm has been existing
GDP	Gross Domestic Product	$\frac{\text{Nominal GDP}}{\text{GDP deflator}}$
α_1	Constants	
$\gamma_0 - \gamma_9$	coefficients	
μ	Stochastic variable or error term	

Source: Author's compilation

A priori Expectation for the variables in model

The Apriori expectations regarding the explanatory variables in the model specified in section above are the most likely pattern of behaviour of the variables. This assumption is based on current knowledge and theories. Table 3 below shows the Apriori expectation of the explanatory variables.

Table 3: A priori Expectation for the variables in model

Description of independent variables	Relationship with dependent variables	Theory
Inventory turnover period	Negative	Cash conversion cycle theory
Average collection period	Negative	Cash conversion cycle theory
Average payment period	Positive	Cash conversion cycle theory
Size of the firm	Positive	Theory of economy of scale
Growth of the firm	Positive	Kaldor-Verdoorn Law
Leverage of the firm	Negative	Trade off theory
Capital expenditure	Positive	Pecking order theory
Age of the firm	Positive	Learning curve theory
GDP	Positive	Macro-economic theory

Source: Authors compilation

Data Analysis

Table 4 explains and describes the spread of the population as reflected in the sample.

Table 4: Descriptive Statistics

Variable	Observations	Mean	Standard Dev.	Minimum	Maximum
EPS	355	56.8959	187.6346	-1549.0000	1011.0000
ITP	323	83.1470	79.0894	0.0550	365.0000
ACP	321	102.6002	80.6162	0.0000	365.0159
APP	281	143.5154	94.4637	1.1113	363.5395
GRTH	352	0.4079	4.8643	-0.9954	88.6843
LEV	355	0.8313	2.6330	0.0000	48.4060
AGE	355	41.1183	18.2769	6.0000	95.0000

Source: Author's own computation.

Table 4 presents descriptive statistics for 71 non-financial firms on the NSE for a term of five years from 2014 to 2018 and for a total of 355 firms year observations. The mean value of EPS is 56.8 kobo and standard deviation is 187.6. It means that value of the EPS can deviate from mean to both sides by 335%. The maximum value for the EPS is 1,011 kobo for a company in a year while the minimum is -1,549 kobo. The inventory turnover period used as a proxy to check the efficiency in managing working capital is on average 83.1 days and standard deviation is 79 days. The minimum ITP is 0.05 days while the maximum ITP is 365 days. Firms receive payment against sales after an average of 102 days and standard deviation is 80 days. Minimum time it takes a company to retrieve cash from receivables is 0 day while the maximum time for this purpose is 365 days. It takes an average of 143 days to pay for inventory purchased with standard deviation of 94 days. Here, minimum time taken by a company to pay for their purchases is 1 day while the maximum time is 363 days. On the average it takes 143 days for firms to pay for their supplies.

Pearson's Correlation Analysis

The table below provides the correlation coefficients of the variables. The coefficient reveals the extent of relationship between the variables.

Table 5: The correlation coefficients of the variables

	1	2	3	4	5	6	7	8	9	10
EPS	–									
ITP	-0.0163	–								
ACP	-0.0279	0.1010	–							
APP	0.0176	0.0259	0.2162	–						
SIZE	-0.0544	-0.0626	0.0842	-0.0719	–					
GRTH	-0.0204	-0.0512	0.0264	-0.0146	-0.0128	–				
LEV	-0.0172	0.0349	0.0141	0.0347	-0.0278	-0.0036	–			
CAP	-0.1760	-0.0699	-0.0604	-0.1022	0.2299	-0.0155	-0.0209	–		
AGE	0.0911	0.2063	-0.1350	0.1175	-0.0665	-0.0027	0.0478	0.0055	–	
GDP	0.0764	0.0061	-0.0785	0.0495	-0.0619	-0.0872	0.0923	0.0030	0.0612	–

Source: Author's own computation.

Table 5 Pearson's correlation analysis helps to see the relationship between each of the explanatory variables and EPS. Correlation results between inventory turnover in days and the EPS with a correlation coefficient of -0.0163 indicates that if the firm takes more time in selling inventory, it will adversely affect its EPS. The correlation results between accounts receivable period and EPS shows a negative coefficient -0.0279, this implies that longer average collection period the less the EPS.

Correlation results among the payable turnover in days or average payment period also indicate the same trend. The coefficient is positive 0.0176 and it means that the more successful firms delay in paying their obligation A positive relationship between number of days accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills. The relationships between, Average collection period, Average payment period and Inventory turnover in days with the EPS of companies are consistent with common findings in empirical literature. The results of correlation analysis generally indicate that working capital management very significantly and strongly affect the EPS of Non-financial Nigerian firms.

Results from Fixed effect, Random effect and POLS estimators

Table 6: Fixed effect, Random effect and POLS estimators results

	Fixed Effect	Random Effect	POLS
ITP	-0.0026** (0.0009)	-0.0040*** (0.0009)	-0.0023*** (0.0003)
ACP	-0.0044** (0.0011)	-0.0047*** (0.0009)	-0.0025*** (0.0004)
APP	0.0010* (0.0006)	0.0000 (0.0005)	0.0007 (0.0014)
SIZE	-0.0000** (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
GROWTH	-0.0568*** (0.0017)	-0.0571*** (0.0009)	-0.0518*** (0.0023)
LEV	-0.0316** (0.0088)	-0.0243 (0.0124)	0.0291 (0.0157)
CAPEX	0.0000*** (0.0000)	0.0000** (0.0000)	0.0000*** (0.0000)
AGE	0.2699*** (0.0327)	0.0155 (0.0162)	0.0164** (0.0039)
GDP	-0.0000*** (0.0000)	0.0000*** (0.0000)	0.0000 (0.0000)
R²	0.8865	0.8865	0.1638
Observations	213	213	213
Firms	63	63	63
FE-p value	0.0001	0.0001	—
Model P-value	0.0001	0.0000	0.000

Source: Author's own computation

Note: The parentheses contain the standard errors. *p < .10. **p < .05. ***p < .01

R- Squared

We present the result from panel data estimation of the effects of alternative measures of working capital management; (which are: accounts collection period (ACP), accounts payable period (APP), inventory turnover period (ITP) on financial performance of non-financial companies. Overall, the regression models have good statistical fit with the t-values significant for most variables. The regression results show an R² of 0.8865 which implies that the independent variables used in this study can predict the EPS of non-financial companies in Nigeria by 88.65% while other variables not captured by the independent variables accounting for 11.35%. This implies that model for the study is strong and statistically significant. The result of the random effect supports the fixed effect with an R² of 0.8865, while the POLS estimator provides an R² of 0.1638 which indicates that the independent variables explained only 16% of the changes in the left hand side variable.

Inventory turnover period

The estimation result from the fixed effects indicates that the coefficient of inventory turnover period on corporate financial performance indicate that the coefficient of inventory turnover period is negative at 1% level of significance, indicating that firms'

EPS increased by 26% by a day reduction of inventory turnover period. As expected and in agreement with most existing studies, the estimation results reveals a significant negative relationship between EPS and inventory which can be translated that the more stock is tied down, the less working capital is available, hence lowering of profit. In the same vein, outcomes from the random effect model indicates that the coefficient of inventory turnover period (ITP) is -0.40, indicating that firms' EPS performance increased by 40% by a day reduction in inventory turnover period. With the POLS estimation technique, the coefficient is -0.23 and also significant at 99% confidence level. This result is in accordance with several previous studies such as Kumaraswamy (2016). This finding seems to support the Apriori expectation that a more restrictive inventory policy theoretically improves firms' profitability performance.

Accounts collection period

The estimation result from the fixed effects indicates that the coefficient of accounts collection period is -0.44 at 5% level of significance, indicating that firms' EPS performance is reduced by 44% by a day lengthening of the numbers of days it takes debtors to settle their accounts. Similarly, the random effect shows that accounts receivable period coefficient is negative at -0.47 and significant at 99% confidence level, indicating that firms' EPS performance is reduced by 47% by a day lengthening of the numbers of days it takes debtors to settle their accounts. The POLS estimation technique also shows that the accounts receivables have a significant effect on EPS with a negative coefficient of -0.25. This result is in line with several previous empirical studies such as Godswill et. al. (2018). This finding is in line with Apriori assumption that a more restrictive credit policy potentially improves firms' profitability performance.

Accounts payable period

The estimation result from the fixed effects model indicates that the coefficient of accounts payable period (APP) is 0.10, this variable is significant, indicating that firms' EPS performance is increased by 10% by a day lengthening of the number of days accounts payable (APP). The POLS estimation technique also shows that the number of days accounts payable (APP) does have a significant effect on EPS with a coefficient of 0.07. This result is in accordance with several previous empirical studies such as Godswill et. al. (2018). This finding seems to be in tandem with conventional conjecture that a longer accounts payment period improves firms' profitability performance.

Control Variables

The Housman test result of 0.1 implies that the fixed effects model are to be adopted in discussing control variables as follows:

With a coefficient of -0.0000, results show that firm size has neutral effect on EPS, suggesting that firms' size neither has a positive nor negative effect on EPS. This implies that companies in the Non-financial sector of the NSE seem to experience what is known as diseconomies of scale. Diseconomies of scale are the negatives that arise due to an increase in firm size, leading to a decreased productivity and consequent production at higher unit cost.

Unexpectedly, the firms' growth variable negatively affects EPS with a coefficient of -5.68. The variable is statistically significant at 99% confidence level. This could be because the earnings of firms do increase at a lower rate when compared to the increase in the number of shares of the companies under study.

Firms' leverage has a coefficient of -3.16 at 5% level of significance, thus implying that the more leveraged or geared a firm is the less its financial performance. This is in line with the Apriori expectation and the tradeoff theory.

Firms' growth variable negatively affects EPS with a coefficient of -3.16. The variable is statistically significant at 99% confidence level. This could be because the earnings of firms do increase at a lower rate when compared to the increase in the number of shares of the companies under studied.

Quite unexpectedly, GDP was seen to negatively affect EPS with a coefficient of -0.00. The variable is statistically significant at 99% confidence level. This implies that the earnings of firms do reduce as GDP increases. However, this may be as a result of a phenomenon earlier discussed that as noted by JP Morgan (2019) and Ernst and Young (2014), firms usually engage in overcapitalization which is the excessive buildup of inventory during economic upturn in anticipation of increased demand. This however often results to reduced efficiency and profitability.

The coefficient of capital expenditure is 0, which shows that firm size has neutral effect on EPS. The variable is statistically significant, implying that the result is 99% reliable. This results contradicts the presupposition of the theory of capital budgeting that capital expenditure is positively related to firm performance. This raises the question about the efficiency of the capital expenditure of the sample firms.

Age of the firm with coefficient of 26.99 shows that a firm's EPS is positively affected by the age of firm. This means that EPS increases by 26.99 with a year increase in age. It is worthy of note that the variable is statistically significant.

Diagnostic Tests

This research work adopted the following tests in order to guarantee the reliability and validity of the research results earlier discussed.

F-test

Table 6 shows that the value of F-statistic was statistically significant at a level of 0.0001 which means that there is a 99.9 percent probability that the relationship among the variables was not due to mere chance and that the model of the study was significant.

Multicollinearity test

Table 5 presents the correlation matrix of the dependent and independent variables in order to detect the problem of multicollinearity. The highest range of correlation coefficient is 0.2299 between the capital expenditure measure and company size. This results suggest there are no severe cases of multicollinearity in the systems of equations.

Heteroscedasticity test

As regards Heteroscedasticity, Autocorrelation and Stationarity, this research addresses heteroscedasticity and autocorrelation using Driscoll and Kraay standard errors (Driscoll and Kraay, 1998). Also, as explained in Wooldridge (2010) and Baltagi (2008), stationarity tests require less attention in short panels. This is due to the fact that the time series attribute of the dataset has a smaller influence relative to the greater number of units. Consequently, short panels utilize the cross-sectional variation within the dataset. Since this research works on a short panel, comprising 71 firms over a relatively short time-frame of 5 years, stationarity issues can be safely ignored.

Hausman Test for endogeneity

Asides helping to choose between fixed effect model and random effects model, the Hausman test also looks to see if there is a correlation between the unique errors and the regressors in the model. Interpreting the result from the Hausman test, (FE vs RE) 0.1 which is equal to 0.1, hence we reject the null hypotheses that there is a correlation between the unique errors and the regressors in the model. Also, the hypothesis that random effect is more preferable to the fixed effect is rejected.

Discussion of Findings

The results are presented below based on the hypotheses identified in section three:

The results show that ITP was found to be significant and positively associated with the EPS. Therefore, ITP has significantly affected the EPS. In view of the above result reported in respect of ITP showing that the variable is statistically significant in influencing the EPS, there is therefore, sufficient evidence to reject null hypothesis one of the study. This result is consistent with the conclusions of previous research works such as Shadrack, Jane and William, (2015).

The results shows that ACP was found to be significant and positively associated with the EPS. Therefore, ACP has significantly affected the EPS. In view of the above result reported in respect of ACP showing that the variable is statistically significant in influencing the EPS, there is therefore, sufficient evidence to reject null hypothesis two of the study. This result is in line with the results of Kumaraswamy, (2016).

APP was found to positive affect EPS. However, APP was statistically significant with the EPS of the non-financial companies quoted on the NSE. Hence, we reject the null hypothesis three of the study. This result is consistent with the outcome of Godswill et. al. (2018).

Firm size was found to be neutral in its effect on financial performance of the businesses. This indicates that size as a control variable neither has a positive nor negative contribution to the financial performance, this result is not consistent with previous studies such as Tanveer, Muhammad, Muhammad, Muhammad and Sadat (2016).

Growth measured by percentage change in the annual turnover of the companies was found to have a negative effect on the monetary performance of the firms. This would mean that the companies experienced reduced performance despite increased in sales revenue. This result seems to contradict the Apriori expectation.

Interestingly, leverage of firms had a negative effect on the financial performance of the companies. This implies the level of gearing of the companies as a control variable has a negative impact on the financial performance and this is in line with the findings of Vuković and Jakšić (2019).

Capital expenditure like firm size had a neutral effect on the financial performance of the companies. This implies that annual capital expenditure of the companies neither has a positive or negative contribution to the financial performance of the companies. This contradicts the Apriori expectation.

GDP which is a measure of economic condition was seen to have a negative impact on financial performance. This contradicts the findings of Mab and Makoni (2019). This implies that the increase in GDP may have been due to inflationary factors which may have arisen from more of cost push than demand pull

Age of the firm was found to have a positive effect on financial performance. This implied that older firms performed better. This is in line with the Apriori expectation.

Conclusions

This study began by discussing the background to the study, after which the research objectives and questions were outlined. Subsequently, a thorough review of empirical and theoretical literature was carried out. The theoretical framework of the study was espoused while elaborating on the conceptual framework underpinning the study. In section three, the research methodology was explained while detailing the sources of data, the nature of population and sample of the study the research design adopted and the model estimation techniques. In section four, an exposition of the results from data analysis was presented. Results from this study are consistent with the result of previous empirical studies such as Shadrack, Jane and William, (2015). This study provides evidence for the cash conversion theory which posits that all aspects of working capital management have significant impact on financial performance. While ITP and ACP were negatively related to EPS, APP was found to have a positive relationship with EPS. The research results also reveal that although all the control variables were found to be significant, only age of firm was deemed to be positively related to EPS.

Recommendations

The recommendations of this study are presented based on the findings made with regard to the sample entities understudied. The following are the recommendations of the study which are based on the findings outlined in the previous section:

- i. Firms should focus their managerial attention on lowering ITP in order to achieve optimal liquidity and higher profitability ultimately. This is based on the result of the study which empirically proves that the lower the inventory turnover period, the higher the profitability of firms in the non-financial sectors. In other words management of firms should develop and implement policies that will aim at reducing the time taken in converting the items of stock (which are deemed as idle resource) to sales which will eventually translate to increased efficiency and improved financial performance.
- ii. Management of firms are advised to work towards reducing the accounts collection period. This is based on the results which tell that a negative and significant relationship between accounts collection period and EPS. In other words, this research recommends that Non-financial companies put in place measures and credit policies aimed at reducing the time period it takes to get their debtors to pay up. In this way, firms can increase their profitability.
- iii. This study recommends that companies reduce their APP in a bid to achieving increased profitability. The results of this research work prove that profit could increase their EPS by delaying in settling their short-term obligations to suppliers and other creditors.
- iv. This study finds that companies in the non-financial sector of the NSE appear to be experiencing diseconomies of scale. This implies that EPS of the companies seem to be reducing with increase in size. In other words size seem to have a negative relationship with EPS. This is an economic phenomenon which usually arises due to increased communication cost, office politics, duplication of efforts and other causes of inefficiencies. This research therefore suggest that firms take a critical look at the efficiency of their processes and operation with a view to cutting down on redundancies and achieving higher productivity.
- v. The results of this study reveal that capital expenditure had a neutral effect on the profitability of firms in the Non-financial sectors of the NSE. This would imply that the capital expenditure did not seem to contribute positively to the profit of firms as should be expected. This raises the question of efficiency of all such capital expenditure. Hence this researcher recommends that companies take a closer look at the effectiveness of their capital budgeting process in order to identify inadequacies that may be responsible for the apparent inefficiency of such spending.
- vi. As noted in the findings, leverage in the sample companies was noted to have a negative impact on EPS. Based on the trade-off theory, it can be inferred that the companies have gotten a point where the level of gearing seems to have a negative relationship with their financial performance. Therefore, a recommendation of this study is that the companies should keep its dependence on debt financing at the minimum.

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